Loudoun County Milling
39098 Irene Road
Hamilton, VA 20158

March 15, 2016

Mr. Douglas Frasier
Virginia Department of Environmental Quality
Northern Regional Office
13901 Crown Court
Woodbridge, Virginia 22193

SUBJECT: Loudoun County Milling Company
Wastewater Treatment Plant
Application for VPDES Permit

Dear Mr. Frasier:

Attached is the application for a VPDES permit for a wastewater treatment plant to serve the Loudoun County Milling Company near the Town of Hamilton in Loudoun County. The package for the VPDES permit is complete but the submission does not include the NPDES permit components of the application.

As you aware, despite the best efforts of my consultants and the good services of your agency, we have been unable to secure a commitment of state or local entities to sell the needed nutrient credits that are required. Our search continues with our outreach to more distant potential sources in the Shenadoah River basin.

We will keep you apprised of our progress in this matter. We thank the Department for its willingness to accept the VPDES application under these circumstances and to begin the processing of the application.

Sincerely,

Joseph M. Rogers Jr.

Joseph M. Rogers, Jr.
Loudoun County Milling Company

Please print or type in the unshaded areas only.

Form Approved. OMB No. 2040-0086.

FORM 1 GENERAL

U.S. ENVIRONMENTAL PROTECTION AGENCY
GENERAL INFORMATION
Consolidated Permits Program
(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER: S F Not Issued | T/A | C D

LABEL ITEMS	PLEASE PLACE LABEL IN THIS SPACE
I. EPA I.D. NUMBER	
III. FACILITY NAME	
V. FACILITY MAILING ADDRESS	
VI. FACILITY LOCATION	

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill-in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill-in area(s) below. If the label is complete and correct, you need not complete Items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of **bold-faced terms**.

SPECIFIC QUESTIONS	Mark "X" YES	NO	FORM ATTACHED
A. Is this facility a **publicly owned treatment works** which results in a **discharge** to **waters of the U.S.**? (FORM 2A)		X	
B. Does or will this facility *(either existing or proposed)* include a **concentrated animal feeding operation** or **aquatic animal production facility** which results in a **discharge** to **waters of the U.S.**? (FORM 2B)		X	
C. Is this a facility which currently results in **discharges** to **waters of the U.S.** other than those described in A or B above? (FORM 2C)		X	
D. Is this a proposed facility *(other than those described in A or B above)* which will result in a **discharge** to **waters of the U.S.**? (FORM 2D)	X		X
E. Does or will this facility treat, store, or dispose of **hazardous wastes**? (FORM 3)		X	
F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)		X	
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X	
H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		X	
I. Is this facility a proposed **stationary source** which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X	
J. Is this facility a proposed **stationary source** which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an **attainment area**? (FORM 5)		X	

III. NAME OF FACILITY

1 SKIP: Loudoun Milling Company Wastewater Treatment Plant

IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*	B. PHONE *(area code & no.)*
2 Rogers, Joseph M. ,Jr., President	(540) 338-7161

V. FACILTY MAILING ADDRESS

A. STREET OR P.O. BOX: 3 18074 Harmony Church Road

B. CITY OR TOWN	C. STATE	D. ZIP CODE
4 Hamilton	VA	20158

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER: 5 NE corner, intersection Route 7 (bypass) and SR 704

B. COUNTY NAME: Loudoun

C. CITY OR TOWN	D. STATE	E. ZIP CODE	F. COUNTY CODE *(if known)*
6 NA	VA	20158	51-107

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

VII. SIC CODES *(4-digit, in order of priority)*

A. FIRST	B. SECOND
7 5812 *(specify)* Restaurant	7 5541 *(specify)* Gasoline Service Station/Convenience Store
C. THIRD	**D. FOURTH**
7 5211 *(specify)* Lumber and other building material	7 2048 *(specify)* Feed and feed ingredients for animals

VIII. OPERATOR INFORMATION

A. NAME

8 Loudoun Milling Company

B. Is the name listed in Item VIII-A also the owner? ☑ YES ☐ NO

C. STATUS OF OPERATOR *(Enter the appropriate letter into the answer box: if "Other," specify.)*

F = FEDERAL
S = STATE
P = PRIVATE
M = PUBLIC *(other than federal or state)*
O = OTHER *(specify)*

P *(specify)* NA

D. PHONE *(area code & no.)*

A (540) 338-7161

E. STREET OR P.O. BOX

18074 Harmony Church Road

F. CITY OR TOWN

B Hamilton

G. STATE VA

H. ZIP CODE 20158

IX. INDIAN LAND

Is the facility located on Indian lands? ☐ YES ☑ NO

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES *(Discharges to Surface Water)*	D. PSD *(Air Emissions from Proposed Sources)*
9 N None	9 P None
B. UIC *(Underground Injection of Fluids)*	**E. OTHER** *(specify)*
9 U None	9 None *(specify)*
C. RCRA *(Hazardous Wastes)*	**E. OTHER** *(specify)*
9 R None	9 None *(specify)*

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers, and other surface water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS *(provide a brief description)*

Multipurpose Commercial Development. Building materials supply (existing), animal feed store (existing), restaurant (future), and service station/convenience store.

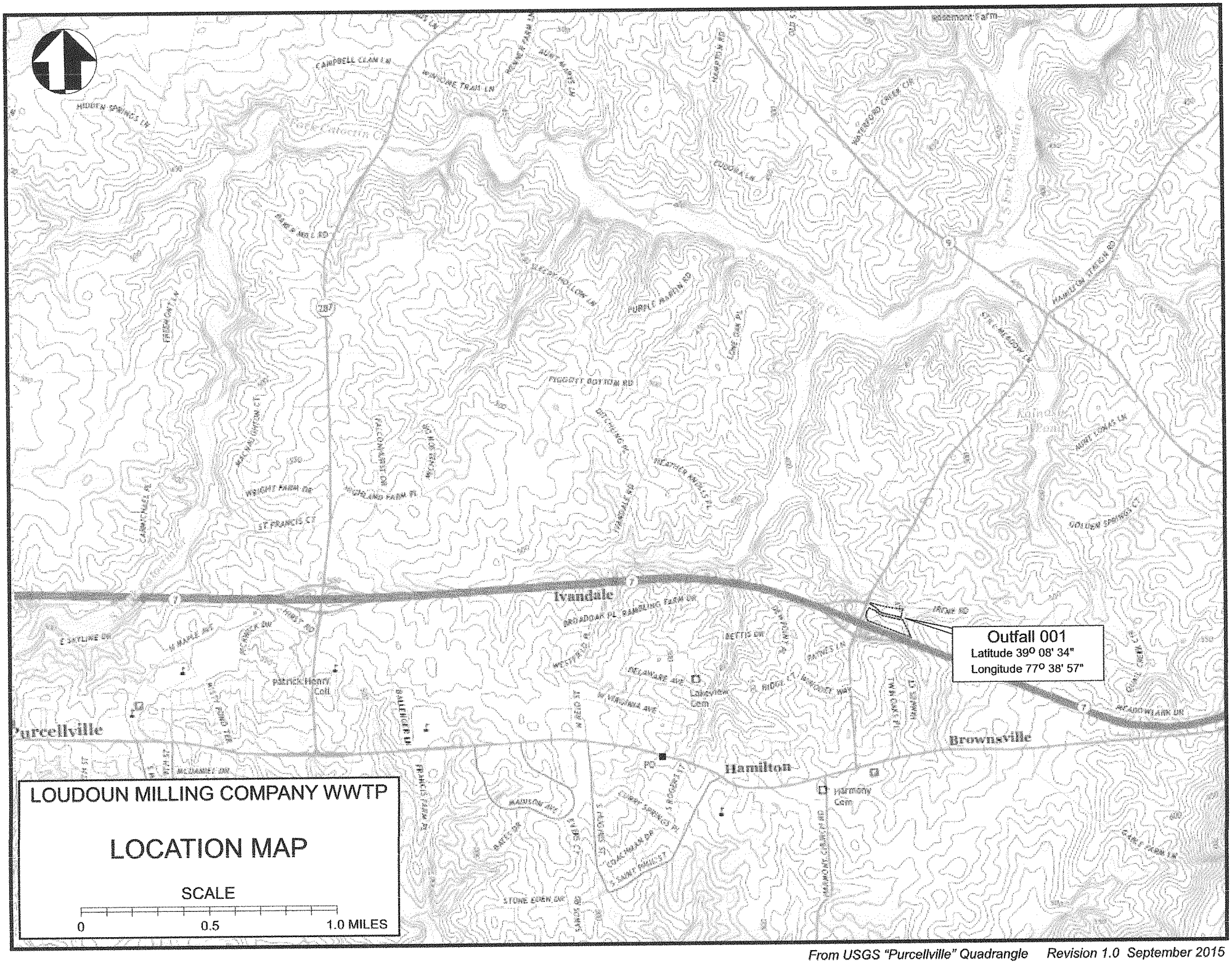
XIII. CERTIFICATION *(see instructions)*

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE *(type or print)*	B. SIGNATURE	C. DATE SIGNED
Joseph M. Rogers, Jr., President	Joseph M. Rogers Jr.	1-26-16

COMMENTS FOR OFFICIAL USE ONLY

C



From USGS "Purcellville" Quadrangle Revision 1.0 September 2015

Form Approved. OMB No. 2040-0086. Approval expires 8-31-98.

Please print or type in the unshaded areas only	EPA I.D. NUMBER (*copy from Item 1 of Form 1*) Not issued	

Form 2D NPDES

New Sources and New Dischargers Application for Permit to Discharge Process Wastewater

I. Outfall Location

For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water.

Outfall Number (*list*)	Latitude			Longitude			Receiving Water (*name*)
	Deg.	Min.	Sec.	Deg.	Min.	Sec.	
001	39	08	35	77	38	57	UT of South Fork Catoctin Creek

II. Discharge Date (When do you expect to begin discharging?)

12/01/2016

III. Flows, Sources of Pollution, and Treatment Technologies

A. For each outfall, provide a description of: (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater. Continue on additional sheets if necessary.

Outfall Number	1. Operations Contributing Flow (*List*)	2. Average Flow (*Include Units*)	3. Treatment (*Description or List codes from Table 2D-1*)
001	Animal Feed Supply	350 GPD	1-T, 3-A, 3-D, 2-C, 1-N, 2-H, 4-A; 5-A
001	Building Supply	120 GPD	1-T, 3-A, 3-D, 2-C, 1-N, 2-H, 4-A; 5-A
001	Restaurant	6000 GPD	1-T, 3-A, 3-D, 2-C, 1-N, 2-H, 4-A; 5-A
001	Service Station/Store	1600 GPD	1-T, 3-A, 3-D, 2-C, 1-N, 2-H, 4-A; 5-A

B. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item III-A. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a water balance cannot be determined (e.g., for certain mining activities), provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures.

C. Except for storm runoff, leaks, or spills, will any of the discharges described in Items III-A be intermittent or seasonal?

☐ YES (*complete the following table*) ☑ NO (*go to Section IV*)

Outfall Number	1. Frequency		2. Flow		
	a. Days Per Week (*specify average*)	b. Months Per Year (*specify average*)	a. Maximum Daily Flow Rate (*in mgd*)	b. Maximum Total Volume (*specify with units*)	c. Duration (*in days*)

IV. Production

If there is an applicable production-based effluent guideline or NSPS, for each outfall list the estimated level of production (projection of actual production level, not design), expressed in the terms and units used in the applicable effluent guideline or NSPS, for each of the first 3 years of operation. If production is likely to vary, you may also submit alternative estimates (attach a separate sheet).

Year	A. Quantity Per Day	B. Units Of Measure	c. Operation, Product, Material, etc. (*specify*)
NA			

CONTINUED FROM THE FRONT	EPA I.D. NUMBER (*copy from Item 1 of Form 1*)	Outfall Number
	Not issued	001

V. Effluent Characteristics

A and B: These items require you to report estimated amounts (*both concentration and mass*) of the pollutants to be discharged from each of your outfalls. Each part of this item addresses a different set of pollutants and should be completed in accordance with the specific instructions for that part. Data for each outfall should be on a separate page. Attach additional sheets of paper if necessary.

General Instructions *(See table 2D-2 for Pollutants)*
Each part of this item requests you to provide an estimated daily maximum and average for certain pollutants and the source of information. Data for all pollutants in Group A, for all outfalls, must be submitted unless waived by the permitting authority. For all outfalls, data for pollutants in Group B should be reported only for pollutants which you believe will be present or are limited directly by an effluent limitations guideline or NSPS or indirectly through limitations on an indicator pollutant.

1. Pollutant	2. Maximum Daily Value *(include units)*	3. Average Daily Value *(include units)*	4. Source *(see instructions)*
Biochemical Oxygen Demand	15 mg/l	10 mg/l	3, 4
	1.13 #/day	0.75 #/day	3, 4
Chemical Oxygen Demand	75 mg/l	50 mg/l	4
	5.6 #/day	3.9 #/day	4
Total Organic Carbon	12 mg/l	8 mg/l	4
	0.90 #/day	0.60 #/day	4
Total Suspended Solids	15 mg/l	10 mg/l	3, 4
	1.13 #/day	0.75 #/day	3, 4
Flow	18,000 GPD	9,000 GPD	4
Ammonia (As N)	0.2 mg/l	0.3 mg/l	4
	0.2 #/day	0.3 #/day	4
Temperature (winter)	25oC	10oC	4
Temperature (summer)	20oC	15oC	4
pH	8.5 SU	6.5 SU	3, 4
Nitrate-Nitrite (as N)	15 mg/l	10 mg/l	3, 4
	1.13 mg/l	0.75 mg/l	3, 4
Phosphorus (as P), Total	1.5 mg/l	1.0 mg/l	3, 4
	0.11 #/day	0.08 #/day	3, 4

CONTINUED FROM THE FRONT	EPA I.D. NUMBER (*copy from Item 1 of Form 1*) Not Issued	

C. Use the space below to list any of the pollutants listed in Table 2D-3 of the instructions which you know or have reason to believe will be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it will be present.

1. Pollutant	2. Reason for Discharge
Ammonia	Small residium for organic nitrogen in sanitary wastewater
Phosphorus	Small residium for organic phosphorus in sanitary wastewater

VI. Engineering Report on Wastewater Treatment

A. If there is any technical evaluation concerning your wastewater treatment, including engineering reports or pilot plant studies, check the appropriate box below.

☑ Report Available ☐ No Report

B. Provide the name and location of any existing plant(s) which, to the best of your knowledge resembles this production facility with respect to production processes, wastewater constituents, or wastewater treatments.

Name	Location
Alpha Training Center	Boone County, West Virginia
Locust Grove Town Center	Locust Grove, Virginia
Oak Hill Academy	Mouth of Wilson, Virginia
Point Thomson	Point Thomson, Alaska

EPA I.D. NUMBER (*copy from Item 1 of Form 1*)
Not issued

VII. Other Information *(Optional)*

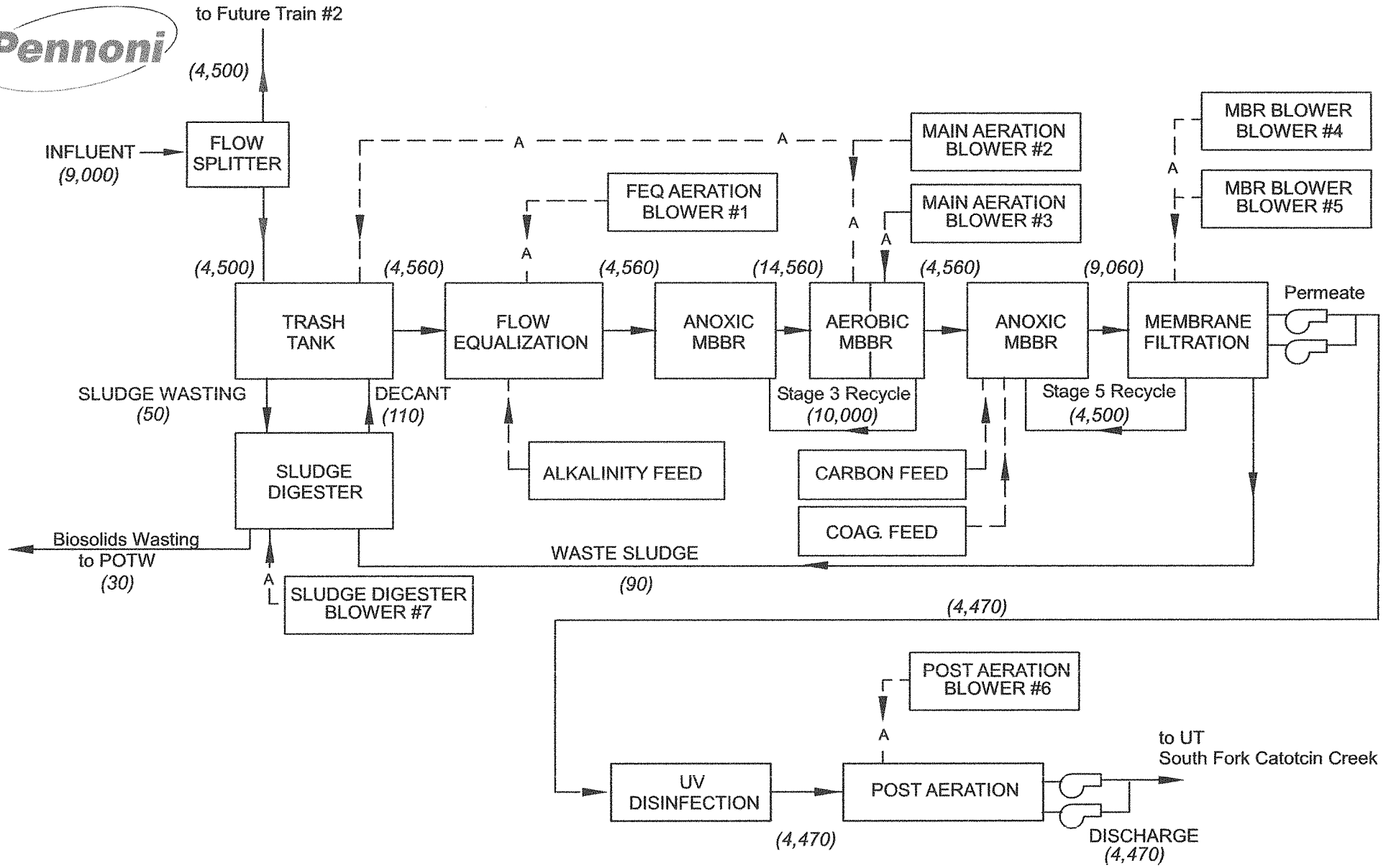
Use the space below to expand upon any of the above questions or to bring to the attention of the reviewer any other information you feel should be considered in establishing permit limitations for the proposed facility. Attach additional sheets if necessary.

NA

VIII. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. Name and Official Title (*type or print*)	B. Phone No.
Joseph M. Rogers, Jr. President	(540) 338-7161
C. Signature Joseph M. Rogers Jr.	D. Date Signed 1-26-16



LOUDOUN MILLING COMPANY
PROPOSED WASTEWATER TREATMENT PLANT
PROCESS SCHEMATIC

NOTES: Values in parentheses are average design flows in GPD.
There will be two trains in parallel, each rated at 4,500 GPD each.

Revision 1.0 September 2015

VPDES Permit Application Addendum

1. **Entity to whom the permit is to be issued:** Loudoun Milling Company

Who will be legally responsible for the wastewater treatment facilities and compliance with the permit? This may or may not be the facility or property owner.

2. **Is this facility located within city or town boundaries?** Yes ☐ No x

3. **Provide the tax map parcel number for the land where the discharge is located.** /37/////////83A

4. **For the facility to be covered by this permit, how many acres will be disturbed during the next five years due to new construction activities?** 2.0

5. **What is the design average effluent flow of this facility?** 0.009 MGD

For industrial facilities, provide the max. 30-day average production level, include units:

NA

In addition to the design flow or production level, should the permit be written with limits for any other discharge flow tiers or production levels? Yes x No ☐

If "Yes", please identify the other flow tiers (in MGD) or production levels:

0.0045 MGD

Please consider the following questions for both the flow tiers and the production levels (if applicable): Do you plan to expand operations during the next five years? Is your facility's design flow considerably greater than your current flow?

6. **Nature of operations generating wastewater:**

Restaurant, Convenience Store, Animal Feed, Building Supply

0 % of flow from domestic connections/sources

Number of private residences to be served by the treatment works: none

100 % of flow from non-domestic connections/sources

7. **Mode of discharge:** x Continuous ☐ Intermittent ☐ Seasonal

Describe frequency and duration of intermittent or seasonal discharges:

NA

8. **Identify the characteristics of the receiving stream at the point just above the facility's discharge point:**

x Permanent stream, never dry

___ Intermittent stream, usually flowing, sometimes dry

___ Ephemeral stream, wet-weather flow, often dry

___ Effluent-dependent stream, usually or always dry without effluent flow

___ Lake or pond at or below the discharge point

___ Other:

9. **Approval Date(s):**

O & M Manual NA, Proposed facility **Sludge/Solids Management Plan** See Attached

Have there been any changes in your operations or procedures since the above approval dates? Yes ☐ No x

LOUDOUN WATER

Loudoun Water
44865 Loudoun Water Way
Ashburn, VA 20147
Phone (571) 291-7700/Fax (571) 223-2910

LOUDOUN WATER
Sludge Disposal Permit

Company Name: **Loudoun County Milling**

Facility Address: **39098 Irene Road**
Hamilton, VA 20158

Permission is hereby granted to **Loudoun County Milling** to dispose of wastewater and sludge via a permitted waste hauler disposing hauled wastes at the Septage Receiving Station of Broad Run Water Reclamation Facility.

The discharge of any pollutant in excess of the authorized levels described in County of Loudoun, Virginia, Code, Chapter 1068 constitutes a violation of this permit. Wastewater Discharge Permit violations will be evaluated and responded to in accordance with Loudoun Water's Pretreatment Program Enforcement Response Plan and County of Loudoun, Virginia, Code, Chapter 1068. Notices of violation, consent orders, cease and desist orders, and other administrative enforcement remedies may be levied against the **Loudoun County Milling** in accordance with the Pretreatment Program Enforcement Response Plan. Judicial enforcement remedies such as injunctive relief, civil penalties, and criminal penalties associated with violation of the terms of this permit may be pursued in accordance with County of Loudoun, Virginia, Code, Chapter 1068.

Loudoun County Milling has been granted this permit in accordance with the County of Loudoun, Virginia, Code, Chapter 1068 to ensure that permitted parameters are not discharged to the sanitary sewer or treatment works in greater quantities than is authorized.

This permit shall be effective on the 1st day of January, 2016, and will expire at midnight on the 31st day of December, 2020.

Issue Date: December 30, 2015

Enclosed: County of Loudoun, Virginia, Code, Chapter 1068

Micah Vieux
Pretreatment Program Coordinator

PUBLIC NOTICE BILLING INFORMATION

I hereby authorize the Department of Environmental Quality to have the cost of publishing a public notice billed to the Agent/Department shown below. The public notice will be published once a week for two consecutive weeks in Loudoun Times - Mirror in accordance with 9 VAC 25-31-290.C.2.

Agent/Department to be billed:	Loudoun County Milling, Inc.
Owner:	Joseph M. Rogers, Jr.
Agent/Department Address:	18074 Harmony Church Road
	Hamilton, Virginia 20158
Agent's Telephone No.:	(540) 338 - 7161
Printed Name:	Joseph M. Rogers, Jr.
Authorizing Agent – Signature:	Joseph M. Rogers Jr.
Date:	1-26-16

VPDES Permit No. VA Not Issued
Facility Name Loudoun Milling Company Wastewater treatment Plant

LOCAL GOVERNMENT ORDINANCE FORM

For new VPDES permit applications

In reference to the request from: **Joseph M. Rogers, Jr.**
Applicant's Name

For certification of a discharge at:
LCTM #/37////////83A; PIN #381-17-8080 Standing in the name of Loudoun County Milling Company, Inc., 39098 Irene Road, Hamilton, Lat: 39°08'33"N Long: 77°38'56"W
Name and Location of Facility

I hereby certify,

X (1) That the proposed location, and operation of the facility is consistent with all ordinances adopted pursuant to Chapter 22 (∋15.2-2200 et seq.) of Title 15.2 of the Code of Virginia

OR

___ (2) That no local ordinances are in effect pursuant to Chapter 22 (∋15.2-2200 et seq.) of Title 15.2 of the Code of Virginia

OR

___ (3) That the proposed location and operation of the facility is **not** consistent with all ordinances adopted pursuant to Chapter 22 (∋15.2-2200 et seq.) of Title 15.2 of the Code of Virginia

Signature | County Administrator (Title)

Tim Hemstreet (Printed Name) | 4/2/15 (Date)

APPROVED AS TO FORM:

DEPUTY COUNTY ATTORNEY

DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER DIVISION PERMIT APPLICATION FEE FORM

FEES EFFECTIVE JANUARY 1, 2008

INSTRUCTIONS

Applicants for individual Virginia Pollutant Discharge Elimination System (VPDES), Virginia Pollution Abatement (VPA), Virginia Water Protection (VWP), Surface Water Withdrawal (SWW), and Groundwater Withdrawal (GW) permits are required to pay permit application fees, except farming operations engaged in production for market. Fees are also required for registration for coverage under general permits, except for the general permits for Domestic Sewage Discharges of 1,000 GPD or less (VAG40), and for Petroleum Contaminated Sites, Groundwater Remediation, and Hydrostatic Tests (VAG83).

NOTE: this form is NOT appropriate for Virginia Stormwater Management Program (VSMP) Construction General Permits, or VSMP Municipal Separate Storm Sewer System (MS4) individual or general permit fees.

The permit fee schedule is included on the back of this form, and includes fees for permit issuance, reissuance*, and for permit modification. Except for VWP permits, fees must be paid when applications are submitted. Applicants for VWP permits will be notified by the DEQ of the fee due. Applications will be considered incomplete if the proper fee is not paid and will not be processed until the fee is received.

* Note: the reissuance fee does not apply to individual VPDES and VPA permits - see the fee schedule for details.

Once you have determined the fee for the type of application you are submitting, complete this form. The form and your check or money order payable to "Treasurer of Virginia" should be mailed to:

Department of Environmental Quality
Receipts Control
P.O. Box 1104
Richmond, VA 23218

You should retain a copy of the form and your check for your records. Please direct any questions regarding this form or fee payment to the DEQ Office to which you are submitting your application.

APPLICANT NAME: Loudoun Milling Company, Inc.

ADDRESS: 18074 Harmony Church Road

Hamilton, Virginia 20158

DAYTIME PHONE: (540) 338 - 7161 (Area Code)

IRS Employer Identification Number (EIN): [redacted]
[*aka* Federal Tax Identification Number (FIN)]

FACILITY/ACTIVITY NAME: Loudoun Milling Company Wastewater Treatment Plant

LOCATION: NE intersection of Route 7 (bypass) and SR 704

TYPE OF PERMIT APPLIED FOR: (from Fee Schedule - see back of form) VPDES Municipal Minor (1,001 - 10,000 GPD)

TYPE OF ACTION: ☑ New Issuance ☐ Reissuance ☐ Modification

AMOUNT OF FEE SUBMITTED (from Fee Schedule): $ 5,400.00 **(Paid on 9/29/2015. Canceled check attached.)**

EXISTING PERMIT NUMBER (if applicable): Not Issued

DEQ OFFICE TO WHICH APPLICATION OR REGISTRATION SUBMITTED (check one)

☐ Abingdon/SWRO	☐ Harrisonburg/VRO	☑ Woodbridge/NRO	☐ Lynchburg/BRRO-L
☐ Richmond/PRO	☐ Richmond/Headquarters	☐ Roanoke/BRRO-R	☐ Virginia Beach/TRO

FOR DEQ USE ONLY
Date: _____ **DC #:** _____

FEE SCHEDULES

A. VPDES and VPA Permits. Applications for issuance of new individual VPDES or VPA permits, and for permittee initiated major modifications that occur (and become effective) before the stated permit expiration date. (Flows listed are facility "design" flows. Land application rates listed are facility "design" rates.) [NOTE: VPDES and VPA permittees pay an Annual Permit Maintenance Fee (APMF) instead of a reapplication fee. The permittee is billed separately by DEQ for the APMF.]

TYPE OF PERMIT	ISSUANCE	MODIFICATION	LAND APP MOD*
VPDES Industrial Major	$24,000	$12,000	
VPDES Municipal Major	$21,300	$10,650	$1,000
VPDES Industrial Minor / No Standard Limits	$10,200	$5,150	
VPDES Industrial Minor / Standard Limits	$3,300	$3,300	
VPDES Industrial Stormwater	$7,200	$3,600	
VPDES Municipal Minor / Greater Than 100,000 GPD	$7,500	$3,750	$1,000
VPDES Municipal Minor / 10,001 GPD - 100,000 GPD	$6,000	$3,000	$1,000
VPDES Municipal Minor / 1,001 GPD - 10,000 GPD	$5,400	$2,700	$1,000
VPDES Municipal Minor / 1,000 GPD or Less	$2,000	$1,000	
VPDES Municipal Minor / 1,000 GPD or Less that includes authorization for land application or land disposal of sewage sludge	$5,000	$1,000	$1,000
VPA Industrial Wastewater Operation / Land Application of 10 or More Inches Per Year	$15,000	$7,500	
VPA Industrial Wastewater Operation / Land Application of Less Than 10 Inches Per Year	$10,500	$5,250	
VPA Industrial Sludge Operation	$7,500	$3,750	
VPA Municipal Wastewater Operation	$13,500	$6,750	
VPA Municipal Biosolids Operation	$5,000	$1,000	
VPA Combined Sludge Operation - Mun. Biosolids & Ind. Sludges (except WTP residuals)	$7,500	$3,750	
All other VPA operations not specified above	$750	$375	

* The fee for modification of a VPDES permit due to changes relating to authorization for land application or land disposal of sewage sludge shall be $1,000.

B. Virginia Water Protection (VWP) Permits. Applications for issuance of new individual, and reissuance or major modification of existing individual VWP permits. Only one permit application fee will be assessed per application; for a permit application involving more than one of the operations described below, the governing fee shall be based upon the primary purpose of the proposed activity. (Withdrawal amounts shown are maximum daily withdrawals.)

TYPE OF PERMIT	ISSUANCE/REISSUANCE	MODIFICATION
VWP Individual / Surface Water Impacts (Wetlands, Streams and/or Open Water)	$2,400 plus $220 for each 4,356 sq. ft. (1/10 acre) (or portion thereof) of incremental impact over 87,120 sq. ft. (two acres) ($60,000 maximum)	$1,200 plus $110 for each 4,356 sq. ft. (1/10 acre) (or portion thereof) of incremental impact over 87,120 sq. ft. (two acres) ($30,000 maximum)
VWP Individual/Minimum Instream Flow - Withdrawals equal to or greater than 3,000,000 gallons on any day	$25,000	$5,000
VWP Individual / Minimum Instream Flow - Withdrawals between 2,000,000 and 2,999,999 gallons on any day	$20,000	$5,000
VWP Individual / Minimum Instream Flow - Withdrawals between 1,000,000 and 1,999,999 gallons on any day	$15,000	$5,000
VWP Individual / Minimum Instream Flow - Withdrawals < 1,000,000 gallons on any day that do not otherwise qualify for a general VWP permit for water withdrawals	$10,000	$5,000
VWP Individual / Reservoir - Major	$35,000	$12,500
VWP Individual / Reservoir - Minor	$25,000	$12,500
VWP Individual/Nonmetallic Mineral Mining	$2,400 plus $220 for each 4,356 sq. ft. (1/10 acre) (or portion thereof) of incremental impact over 87,120 sq. ft. (two acres) ($7,500 maximum)	$1,200 plus $110 for each 4,356 sq. ft. (1/10 acre) (or portion thereof) of incremental impact over 87,120 sq. ft. (two acres) ($3,750 maximum)

C. Surface Water Withdrawal (SWW) and Groundwater Withdrawal (GW) Permits. Applications for issuance of new individual, and reissuance or major modification of existing individual SWW permits or GW permits.

TYPE OF PERMIT	ISSUANCE/REISSUANCE	MODIFICATION
Surface Water Withdrawal	$12,000	$6,000
Groundwater Withdrawal / Initial Permit for an Existing Withdrawal Based Solely on Historic Withdrawals	$1,200	$600
Groundwater Withdrawal	$6,000	$3,000

D. Registration Statements (VPDES and VPA permits) or Applications (VWP permits) for General Permit Coverage.

1. Except as specified in 2, 3, and 4 below, the fee for registration for coverage under a general permit is $600. ***(Note: this does not include VSMP Construction General Permits or Municipal Separate Storm Sewer System (MS4) General Permits.)***
2. General VPDES Permit for Domestic Sewage Discharges of Less Than or Equal to 1,000 GPD (VAG40) = $0.
   General VPDES Permit Regulation for Discharges From Petroleum Contaminated Sites (VAG83) = $0.
3. VWP General Permit:

TYPE OF PERMIT	ISSUANCE
VWP General / Less Than 4,356 sq. ft. (1/10 acre) of Surface Water Impact (Wetlands, Streams and/or Open Water)	$0
VWP General / 4,356 sq. ft. to 21,780 sq. ft. (1/10 acre to 1/2 acre) of Surface Water Impact (Wetlands, Streams and/or Open Water)	$600
VWP General / 21,781 sq. ft. to 43,560 sq. ft. (greater than 1/2 acre to one acre) of Surface Water Impact (Wetlands, Streams and/or Open Water)	$1,200
VWP General / 43,561 sq. ft. to 87,120 sq. ft. (greater than one acre to two acres) of Surface Water Impact (Wetlands, Streams and/or Open Water)	$1,200 plus $120 for each 4,356 sq. ft. (1/10 acre) (or portion thereof) of incremental impact over 43,560 sq. ft. (one acre) ($2,400 maximum)
VWP General / Minimum Instream Flow / Reservoir - Water withdrawals and/or pond construction	$2,400

4. General VPDES Permit for Industrial Activity Storm Water Discharges (VAR05) = $500.

Stream Investigation

For the

Loudoun Milling Site

Hamilton, Virginia 20158-3132

Loudoun County

39098 Irene Road

(Pin# 381-17-8080)

Prepared for

Loudoun County Milling Company, Inc.

Joseph M Rogers Jr

18074 Harmony Church Road

Hamilton, VA 20158

by

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Private Consultant
23 Cedar Crest Lane
Front Royal, Virginia 22630

October 2015
Updated **November 2015**

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Summary of Findings

Based on The Fairfax County Stormwater Planning Division's Perennial Stream Field Identification Protocol, May 2003, it was determined that the reach of stream on the Loudoun Milling site between Irene Road and the Washington and Old Dominion trail (Reach 1- see Figure 2 Plan View Map) is a perennial stream. The score based on the Protocol was 47.5 out of a total possible 66. A minimum total score of 25 is used as a guideline for classifying a stream as perennial. Based on the preponderance of field evidence that is documented in the following report, and the corresponding high score of 47.5, this stream reach should be classified as a perennial stream.

After this reach was completed another reach was examined using the same protocols described above. This reach was just upstream of Reach 1 along the larger of the two tributaries, between Irene Road and State Route 7 (Reach 2 - see Figure 2 Plan View Map). While the score was not as strong as Reach 1, it was still 37.5 easily above the minimum of 25. Thus reach 2 should be categorized as a perennial stream as well.

In addition, anecdotal evidence from longtime residents of the area and employees of Loudoun Milling indicates that there are active seeps and springs upstream of these reaches which help to keep water flowing in the channel all year long. No one can recall a time when the streams have been dry, they have always been flowing.

Purpose

The purpose of this study was to perform a stream investigation of two stream reaches of the Loudoun Milling property to determine the classification of the stream as either perennial or intermittent.

Site and Reach Information

Located at 39098 Irene Road, the approximately 0.58 acre site (see Figure 1 - Vicinity Map on the following page) is located near the Town of Hamilton, in Loudoun County, in the State of Virginia (Lat: 39.1437 Lon: -77.6504).

The site can be reached using the following directions: From Leesburg, Virginia take Route 7 West towards Purcellville. Take the Hamilton Station Road (State Route 704) exit. Where the off ramp intersects with Hamilton Station Road, go straight through onto Irene Road (State Route 706). The site is immediately on the left.

The first reach (Reach 1) of stream investigated is a second order tributary (drainage area of 0.65 square mile) to the South Fork Catoctin Creek (see Figure 2 - Plan View Map) between Irene Road and the Washington and Old Dominion Trail. The upstream beginning of the reach is at the confluence of two first order tributaries located just downstream of Irene Road. The second reach (Reach 2) is the most downstream section (drainage area of 0.48 square mile) of a first order tributary (see Figure 2 - Plan View Map) between Irene Road and State Route 7. The upstream beginning of Reach 2 is at State Route 7 and the downstream end of the reach is at the confluence with Reach 1 located just downstream of Irene Road.

Approach

The Fairfax County Stormwater Planning Division's Perennial Stream Field Identification Protocol, May 2003 was used to make a perennial stream determination for the subject reach. Information and definitions from that protocol has been interspersed through this report.

This protocol defines procedures for making field determinations between perennial and intermittent Streams. The determination between a perennial and intermittent stream is based on the combination of hydrological, physical and biological characteristics of the stream. Field indicators of these characteristics are classed as primary or secondary and ranked using a weighted, four-tiered scoring system similar to the current system developed by the North Carolina Division of Water Quality (NCDWQ).

As discussed below in field reconnaissance procedures, a stream reach is classified as perennial based on the overall score as well as supporting information such as long term flow monitoring, presence of certain aquatic organisms, or historic information.

Definitions of perennial and intermittent streams follow:

A *perennial stream* is a body of water flowing in a natural or man-made channel year-round, except during periods of drought. The term "water body with perennial flow" includes perennial streams, estuaries, and tidal embayments. Lakes and ponds that form the source of a perennial stream, or through which the perennial stream flows, are a part of the perennial stream. Generally, the water table is located above the streambed for most of the year and groundwater is the primary source for stream flow. In the absence of pollution or other manmade disturbances, a perennial stream is capable of supporting aquatic life.

An *intermittent stream* a body of water flowing in a natural or man-made channel that contains water for only part of the year. During the dry season and periods of drought, these streams will not exhibit flow. Geomorphological characteristics are not well defined and are often inconspicuous. In the absence of external limiting factors (pollution, thermal modifications, etc), biology is scarce and adapted to the wet and dry conditions of the fluctuating water level.

Field reconnaissance and documentation procedures

To determine if a stream reach is perennial a number of different factors were looked at in the field and scored 0 to 3 or 0 to 1.5 (if it was a secondary factor), based on whether the indicator was weak (0) or strong (1.5 or 3).The major areas of concern were Streamflow and Hydrology (5 indicators), Geomorphology (10 indicators), Streambed Soils (2 indicators), Vegetation (4 indicators), Benthic Macroinvertebrates (3 indicators), Vertebrates (2 indicators).

The final determination of whether a stream reach is perennial is based on a preponderance of information including the total score, supporting information and professional judgment. A minimum total score of 25 is used as a guideline for classifying a stream as perennial.

A data sheet including all the indicators was compiled for the stream reach in question. In addition, the areas immediately upstream and downstream were also spot checked. Determinations made for the representative stream reach were performed along at least 200 feet of stream channel and not at a single point. The reach studied had similar physical characteristics.

When assessing the field indicators, in addition to the individual descriptions given below, the amount of time and effort involved in locating and identifying the features described were factored into each ranking. The rankings are described below, and normally the Absent ranking would be given a score of 0, while the Strong ranking would be scored as 1.5 or 3, and the intermediate rankings would be a number such as 1 or 2 , or .5 and 1.

Vicinity Map

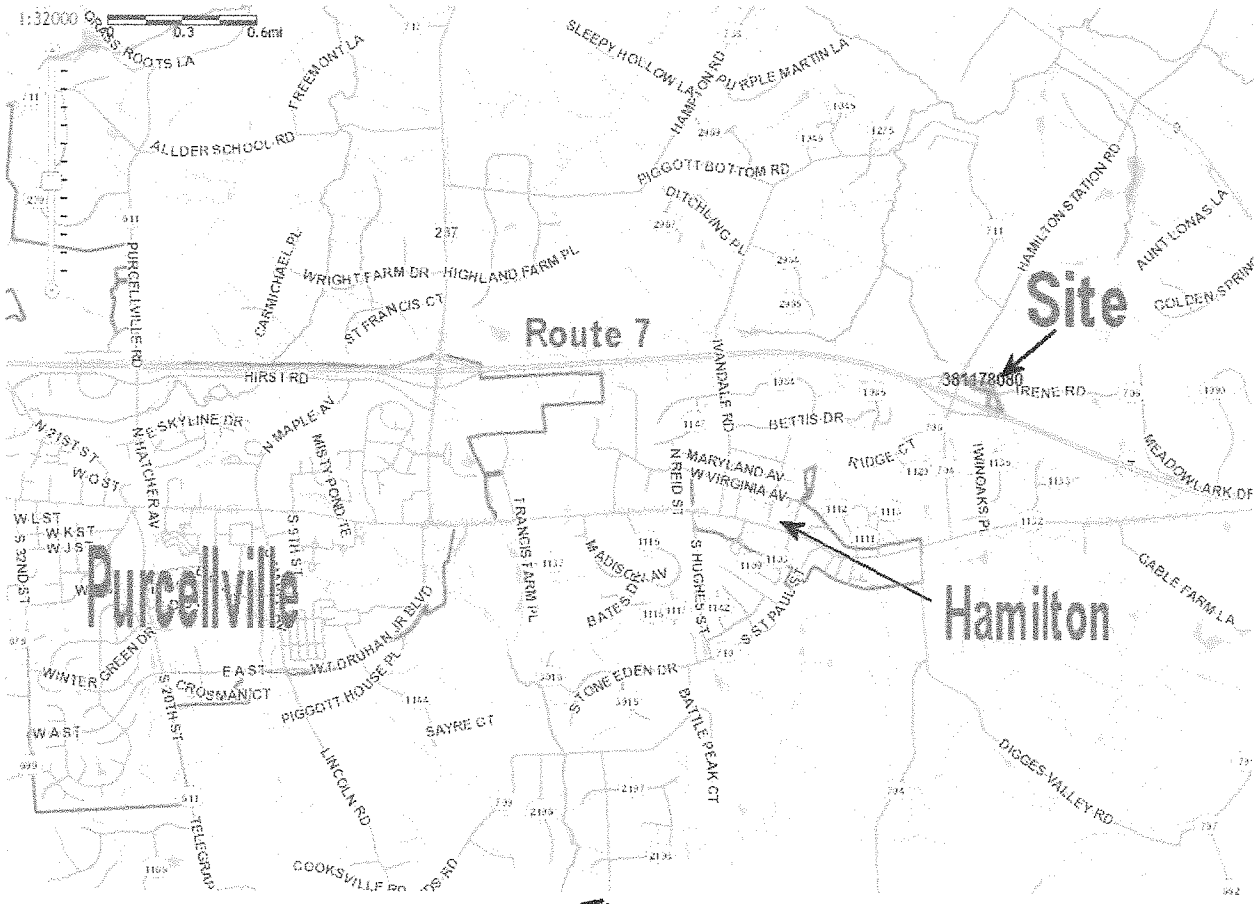


Figure 1

Plan View Map

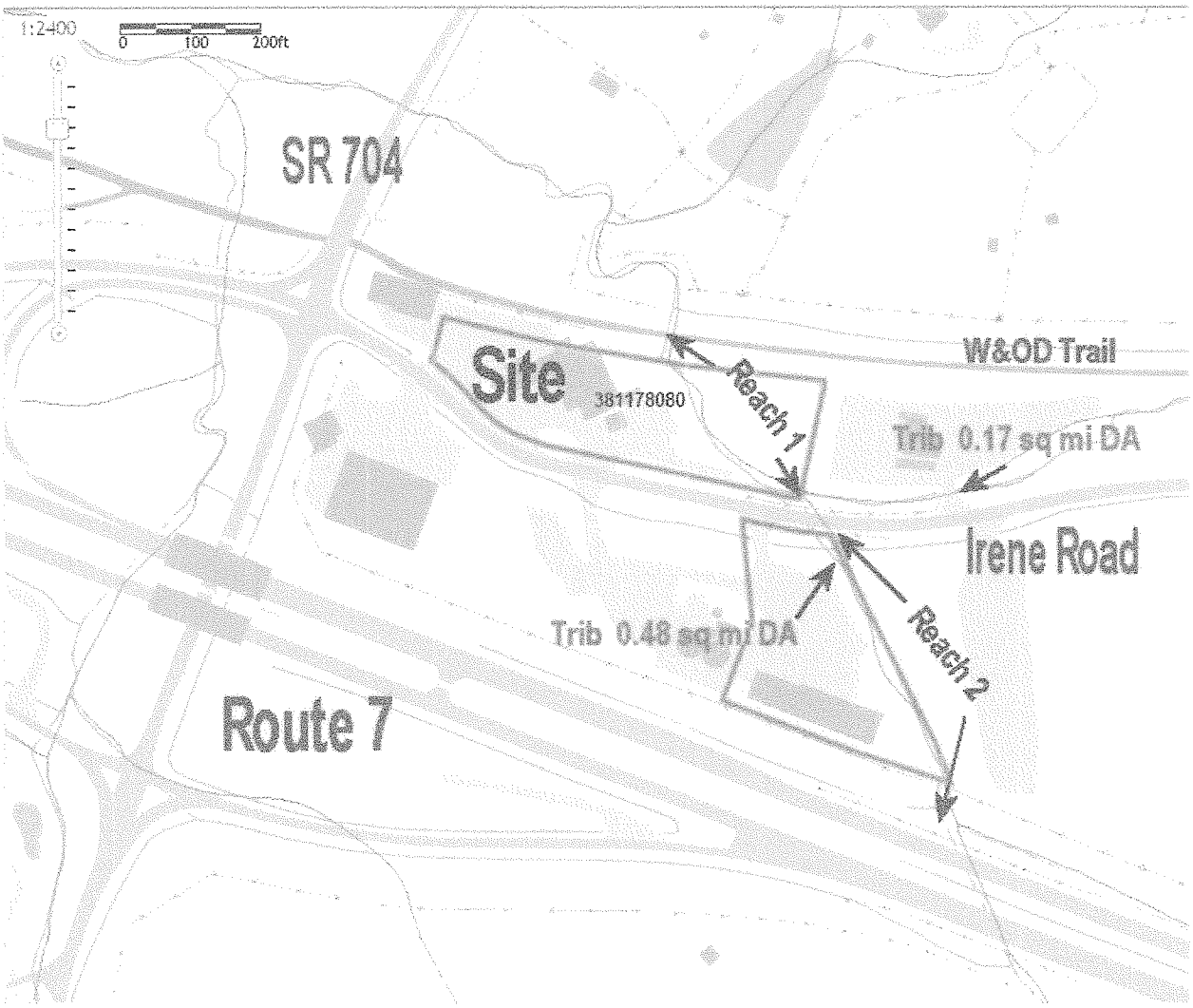


Figure 2

Field Indicators

Reach 1

Streamflow and Hydrology

1. Presence or absence of flowing water, >48 hours since last rainfall: **Strong Indication**

In order to ensure that the field investigation was performed more than 48 hours (two days) after the last rainfall, precipitation data from two rainfall stations in the immediate vicinity of the site were obtained from the Weather Underground web site. The data below (the average between the two stations) clearly shows that the last rainfall (only .08 inch) occurred three days before the 9/25 site visit.

Weather Underground KVAHAMIL8 KVAHAMIL2

Date	9/25	9/24	9/23	9/22	9/21	9/20	9/19	9/18
Rainfall*	0	0	0	.08	.20	0	0	0
Date	9/17	9/16	9/15	9/14	9/13	9/12	9/11	9/10
Rainfall*	0	0	0	0	0	.48	0	.13
Date	9/09	9/08	9/07	9/06	9/05	9/04	9/03	9/02 & 9/01
Rainfall*	0	0	0	0	0	0	0	0

* Rainfall in inches

Steam flow was highly evident throughout the reach, and moving water was easily observed in the riffles. Perennial streams will have water in their channels year-round in the absence of drought conditions. If a stream exhibits flowing water in the height of the dry season (mid-summer through early fall), then it probably conveys water perennially. Since the site visit was performed in early fall, the presence of flowing water is a strong indicator of perennial flow. The drainage area of 0.65 square mile is large enough to support yearly flow. **Score 3.**

2. Presence of high groundwater table or seeps and springs: Groundwater Table: **Weak Indication**

The presence of a high groundwater table or discharge (i.e. seeps or springs) indicates a relatively reliable source of water to a nearby stream. Although there were indicators present that pointed to seeps, such as water slowly flowing out from the side of the stream channel, they were only at a few locations and would only be a weak indicator of perennial flow. **Score 1.**

3. Leaflitter in streambed: Strong Indication

Perennial streams (with deciduous riparian vegetation) should normally continuously transport plant material through the channel, while leaves and lighter debris will predominate throughout the length of non-perennial stream channels. A key observation would be to determine if leaves are "blackish" in color and/or partially decomposed and accumulating in the streambed?

For this reach leaf litter was not present in the fast moving areas of the reach, although there were newly fallen leaves in the pools. No blackish or decomposing leaves were observed. This is a strong indicator of a perennial stream. **Score 1.5.**

4. Drift lines or wrack lines: Strong Indication

Twigs, sticks, logs, leaves, trash, plastics, and any other floating materials piled up on the upstream side of obstructions in the stream, on the streambank, in overhanging branches, and/or in the floodplain indicate high stream flows and usually perennial flow conditions.

For this reach drift lines were prevalent within the channel and along the upstream side of obstructions within the channel. This is a strong indicator of a perennial stream. **Score 1.5**

5. Sediment on debris or plants: Strong Indication

In perennial streams, plants in the stream, on the streambank, or in the floodplain are stained white, gray, red, or brown, with sediment (assuming this does not come from land disturbing activities).

For this reach sediment was easily apparent on plants within the stream channel, on the streambank, and along the overbank areas (floodplain). This is a strong indicator of a perennial stream. **Score 1.5.**

Geomorphology

1. Riffle-Pool sequence: Strong Indication

A repeating sequence of riffle/pool (or riffle/run in lower-gradient streams) can be observed readily in perennial streams. This is a result of sediment transport and the work of channel-shaping hydrologic forces. In smaller streams, riffles are defined as areas of a distinct change in gradient where flowing water can be observed. Pool-Areas are areas of slow moving water, where the stream widens and deepens.

Along this reach there was a clear and frequent sequence of riffles followed by pools, as well as an obvious transition between the two. This is a strong indicator of a perennial stream. **Score 3.0.**

2. USDA Texture in stream bed/Substrate Sorting: Strong Indication

In pristine stream environments with a normal flow regime, substrate movement is highly dependent upon particle size; heavier substrate material (sands, gravel and cobbles) tends to remain in place while the finer silts and clays are transported quickly downstream. The occurrence of depositional features will be infrequent in intermittent streams. Perennial streams, on the other hand, tend to exhibit correspondingly larger depositional features, with cobble/gravel/boulders being localized in riffles and runs, and with accumulations of fine sediments settling out in pools.

For this reach there is a clear distribution of various sized substrates. Depositional features are present as finer particles tend to accumulate in pools, and larger particles are located in the riffles / runs. This is a strong indicator of a perennial stream. **Score 3.0.**

3. Natural levees: Weak Indication

Levees develop when sand or silt is deposited relatively parallel to the top of the bank. These aid in the concentration of water to the channel during periods of high flow. They are represented as large "mounds", "hills", or broad low "ridges" that may be covered by vegetation or remain as bare areas.

This feature was only observed in a few places and the hills or mounds were relatively low. This would be considered a weak indicator. **Score 1.0**

4. Sinuosity: Moderate Indication

Sinuosity is the ratio of the stream channel length (SL) to the down-valley length (VL). In other words, how much does the stream bend and curve (meander)? As the ratio (SL/VL) gets larger, the stream is considered more sinuous. Sinuosity is the result of the stream naturally dissipating its flow forces. Intermittent streams do not have a constant flow regime, and as a result exhibit significantly less sinuous channel morphology. As measured using a 1"=50' plat of the area, the SL/VL ration was found to be less than 1.4 but greater than 1.2. This represents good sinuosity with some straight sections, which fairly describes this stream reach. This is a moderate indicator of a perennial stream. **Score 2.0.**

5. Active (or Relic) Floodplain: Moderate Indication

Floodplains are relatively flat areas usually located outside of or adjacent to the stream bank that accumulate organic matter and alluvium deposited during flooding. An active floodplain shows characteristics such as drift lines, sediment deposited on the banks or surrounding plants, which may also be flattened by flowing water. In cases of severe channel incision (down-cutting) the stream's new floodplain may be restricted to within the channel itself, and its disconnected (relic) floodplain will be harder to see (outside of channel).

For this reach some of the areas along the reach exhibit tell-tale floodplain characteristics, but they are not present everywhere. This would be considered a moderate indicator of a perennial stream. **Score 2.0.**

6. Braided Channel: Absent

Braided channels occur in shallow, low gradient areas where abundant sediment has a tendency to build up, crosscutting the stream creating a braided pattern.

Along this reach there were no indications of braided channels, thus this indicator was absent. **Score 0.**

7. Recent Alluvial Deposits: Strong Indication

Alluvium may be deposited as sand, silt, various sized cobble, and gravel. Normally if this indicator exists there will be recent deposition or accumulation of these substrates within the stream channel (sand and point bars) or floodplain. The amount of alluvium deposited will indicate whether water is constantly pushing substrate downstream and will also determine ranking.

For this reach sand and point bars were easily located within the channel, and some in the floodplain. This is a strong indicator of a perennial stream. **Score 3.0.**

8. Bank-full Bench present: Strong Indication

When a stream channel conveys perennial flow, the forces of channel scouring and deposition create certain distinct physical features, which can be readily observed. One of these features includes scoured areas along the bank above which the stream banks are much less eroded. Another feature is accumulations sand or silt creating a bar or "bench" which may or may not be covered with vegetation. Bank-full indicators imply that the channel experiences a relatively continuous hydrologic regime and is in dynamic equilibrium with the shaping forces of its water/sediment load.

The flow regime, soils and grade determine the bank-full width and morphology of the conveyance channel. The more obvious and continuous the bank-full features are throughout the reach, the stronger the indication would be of a perennial stream.

For this reach vegetated benches were observed throughout. This is a strong indicator of a perennial stream. **Score 3.0.**

9. Continuous bed and bank: Strong Indication

A perennial stream will typically exhibit throughout the length of the stream a well-defined and clearly discernable bank and streambed. The clarity of this indicator lessens upstream as the stream becomes intermittent and then ephemeral.

For this reach there is a continuous bed and bank throughout. This is a strong indicator of a perennial stream. **Score 3.0.**

10. Second order or greater channel: Strong Indication

The higher the channel order the more likely the stream is to be perennial. Second order flowing streams are almost always perennial, while second order channels are usually in the intermittent/perennial zone.

For this reach two first order channels are draining into the stream above the reach. This is a strong indicator of a perennial stream. **Score 3.0.**

Streambed Soils

1. Redox-morphic features: Strong Indication

Iron found in the matrix of soil continuously inundated with water cannot come in contact with the oxygen in the air and thus stays in the reduced ferrous (Fe2+) valence state. This is seen as a grayish soil matrix. If the soil goes through a wetting/drying phase (as with intermittent or ephemeral streambeds), the iron will oxidize once in contact with atmospheric O2 to form the ferric (Fe3+) valence state. This is seen as the classic iron oxide or "rust" red color mottling within the matrix. This is a redox-morphic feature.

The soil did not contain redoximorphic features in the sides of the channel. This is a strong indicator of a perennial stream. **Score 1.5.**

2. Chroma: Strong Indication

Mineral soils which are exposed to atmospheric oxygen in the soil profile will have some degree of oxidation occurring and as a result will have bright red, orange, or yellow matrix colors. Saturated soils, such as those found in the streambeds of perennial streams, have limited or no contact with O2, will remain reduced and subsequently have a very dull color chroma or may be gleyed completely (dull gray hues or chroma throughout soil).

The soils in this reach are composed of Mongle loam which is a very deep, somewhat poorly drained brown and mottled brown and gray loamy to silty soils with seasonal water tables in concave drainageway positions; developed in alluvium and local colluvium from mixed acid and basic rock. According to the "Interpretive Guide to the use of Soils Maps - Loudoun County Virginia," Mongle loam contains significant inclusions of Hydric Soils (Hatboro).

The channel soils were definitely gleyed (Munsell - 10G 5/1) thus this is a strong indicator of a perennial stream. **Score 3.0.**

Vegetation

1. Rooted AQUATIC plants in channel: Moderate Indication

There were a few aquatic plants found in the stream, but they were not consistently found through the reach. This would be a moderate indicator of a perennial stream. **Score 2.0.**

2. Presence of Periphyton/Green Algae: Weak Indication

These forms of algae and aquatic mosses are attached to the substrate, and are visible as a pigmented mass or film, or sometimes hairlike growths on submerged surfaces of rocks, logs, plants and any other structure within the stream channel. These life forms require an aquatic environment to persist. Periphyton growth is influenced by chemical disturbances such as increased nutrient (N and P) inputs and physical disturbances such as increased sunlight to the stream from riparian zone disturbances.

There were aquatic mosses growing on logs and roots in the stream, although this was not prevalent throughout the reach. This would be a weak indicator of a perennial stream. **Score 1.0.**

3. Iron Oxidizing Bacteria/Fungus: Moderate Indication

Iron oxidizing bacteria/fungus in streams derives energy by oxidizing iron, originating from groundwater, in the ferrous form (Fe2+) to the ferric form (Fe3+). In large amounts, iron-oxidizing bacteria/fungus discolors the stream substrate giving it a red appearance. In small amounts, it can be observed as an oily sheen on the water's surface. This indicates that the stream is being recharged from a groundwater source, and these features are most commonly seen at seeps or springs.

This was observed in a few places along the reach. This would be a moderate indicator of a perennial stream. **Score 1.0.**

4. Wetland plants in streambed: Weak - Moderate Indication

A key wetland plant indicator observed in the stream channel was Jewel weed. Although there were others, this was the dominant plant. Jewel weed is considered facultative wet. This represents a weak to Moderate indicator of a perennial stream. **Score1.0.**

Benthic Macroinvertebrates

1. Benthic Macroinvertebrates: Moderate Indication

The larval stages of most aquatic insects are good indicators that the stream is perennial because they require a continuous aquatic habitat until maturity. Crayfish and other crustaceans, as well as aquatic worms and snails are also included under this indicator. The existence of crayfish can also be detected by the presence of "crayfish chimneys" (an extruded tunnel of clay) seen on the stream banks. Follow the sampling/identification procedures detailed above.

Some worms and snails were observed although not prevalent in all areas. This would be a moderate indicator of a perennial stream. **Score 1.0.**

2. Bivalves: Absent

Clams require a constant aquatic environment in order to survive. Incorporate the search for bivalves while looking for other benthic macroinvertebrates. This indicator also includes any empty shells found on stream banks and within the channel.

This indicator was not found and thus is classified as absent. **Score 0.**

3. Ephemeroptera, Plecoptera, and Tricoptera (EPT) taxa: Strong Indication

The larval stages of many species of these three orders require a period of at least a year, submerged in a constantly flowing aquatic environment before reaching maturity and therefore are commonly associated with perennial streams.

A number of the representative groups of Mayflies, Stoneflies and Caddisflies were observed, and thus their presence indicates a strong indication of perenniality. **Score 3.0**

Vertebrates

1. Fish: Strong Indication

The drastically fluctuating water levels of intermittent streams provide unstable and stressful habitat conditions for fish communities. Only a small number of species will opportunistically inhabit available areas within intermittent streams. Therefore, the presence of fish is used as a secondary indicator of perenniality.

Fish ranging in size from one half inch to four inches were observed in all areas of the reach especially in the deep pools. Their presence indicates a strong indication of perenniality. **Score 1.5.**

2. Amphibians: Moderate Indication

Newts, frogs, salamanders and tadpoles can be found under rocks, on streambanks and on the bottom of the stream channel. They may also appear in the benthic sample Amphibian eggs, also included as a minor indicator, can be located on the bottom of rocks and in or on other submerged debris. They are usually observed in gelatinous clumps or strings of eggs. Frog eggs will be much more prevalent in the springtime. Identify the species of amphibian or describe in detail the characteristics observed. A persistent water regime is not an exclusive requirement for all amphibious species, therefore this is a secondary indicator of perenniality.

While a number of frogs were seen they were not in large numbers thus this would be a moderate indicator of a perennial stream. **Score 1.0.**

Reach 2

Instead of detailing all of the field indicators for reach 2, a summary of the differences between reach one will be presented, since for the most part many of the indicators were very similar. See the data sheets for individual scoring for each parameter.

For Streamflow and Hydrology the reach two score was 8 versus reach one's 8.5, due to some leaflitter in the streambed. Also even though the score for the presence of *high groundwater table or seeps and springs* indicator was only 1 (weak) for reach two, anecdotal evidence from longtime residents of the area and employees of Loudoun Milling indicates that there are active seeps and springs upstream of this reach which help to keep water flowing in the channel all year long. No one can recall a time when the stream has been dry, it has always been flowing.

For Geomorphology the reach two score was 16 versus reach one's 23. This was the biggest difference between the two reaches. The lower score for reach two was due to only moderate substrate sorting, the absence of natural levees, weaker sinuosity, only moderate bankfull bench, and the fact that this tributary was first order not second order (although because the reach was located at the downstream most section of the tributary with a drainage area of 0.48 square miles it is a size of some second order streams.)

For Streambed Soils there was no difference, both reaches scored 4.5

For Vegetation the reach two score was 3.5 versus reach one's 5 due to mostly facultative vegetation in the streambed and weaker presence of Aquatic plants in the streambed.

For Benthic Macroinvertebrates the reach two score was 3.5 versus reach one's 4 due weaker presence of benthic macroinvertebrates.

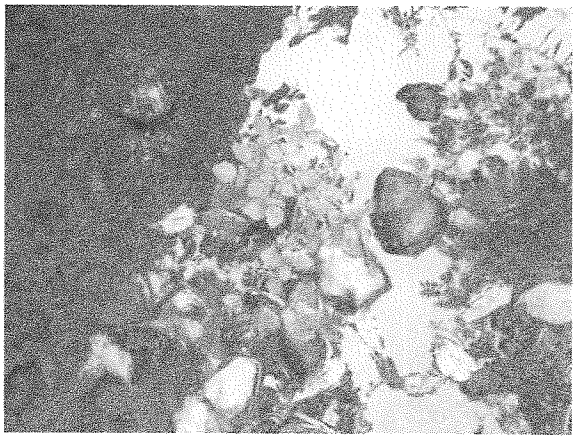
For Vertebrates the reach two score was 2 versus reach one's 2.5 due to weaker presence of amphibians.

The total score for Reach 2 was 37.5 versus 47.5 for Reach 1, which is still well above the minimum of 25 to be categorized as a perennial stream.

Exhibit 1 – Pictures

Riffle

Pool

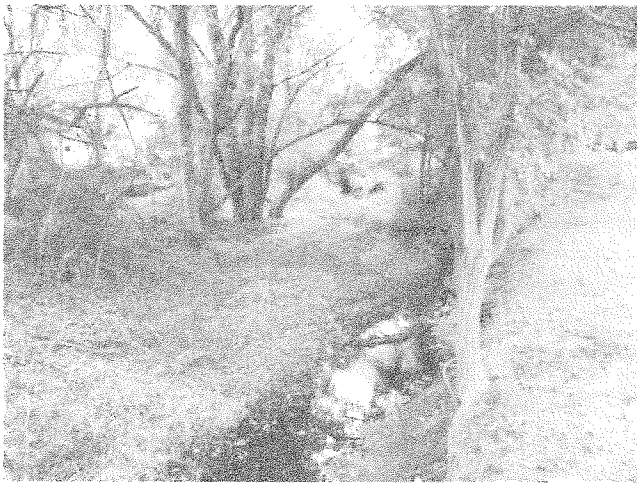



Aquatic plants


Iron Oxidizing Bacteria/Fungus

Presence of Periphyton/Green Algae

FACW wetland vegetation (Jewelweed)



Continuous bed and banks, and bench

Recent Alluvial Deposits

Active (or Relic) Floodplain

Drift lines or wrack lines

Drift lines or wrack lines

Sediment on debris or plants

Fish

Exhibit 2 - FEMA Flood Insurance Rate Map

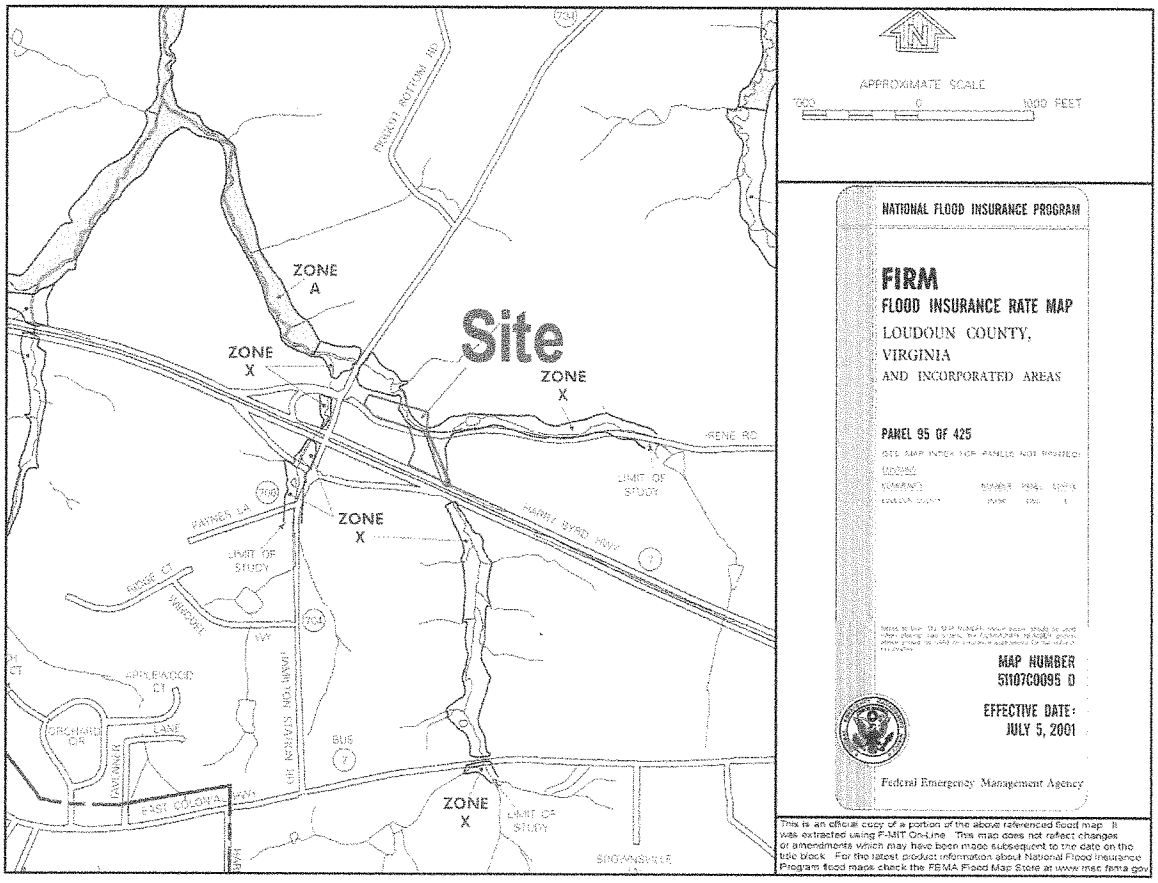


Exhibit 3 - Drainage Area Map

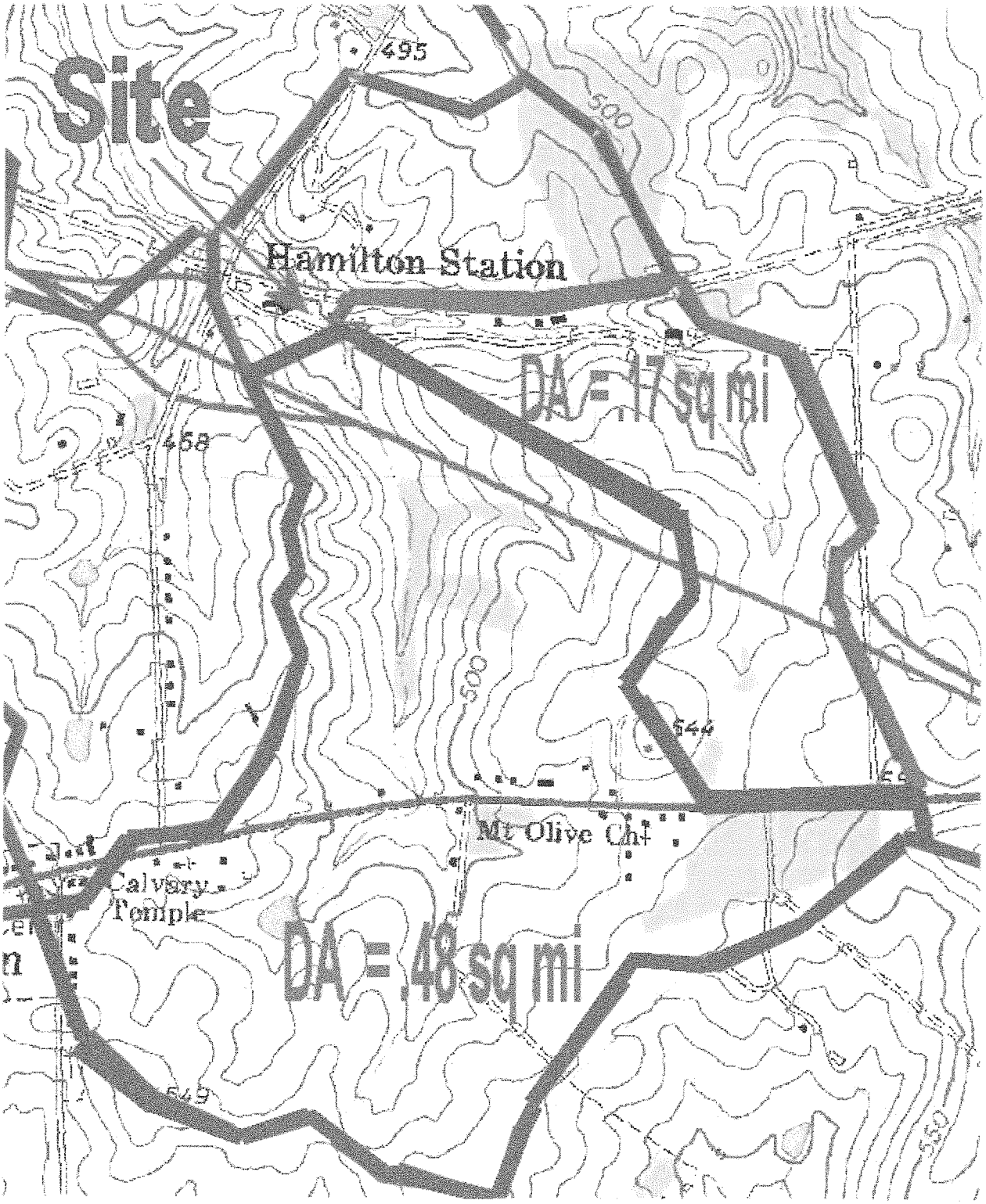


Exhibit 4 – Data Sheets

Site ID: 1	Total Score: 47.5

Date: 9/25/2015 Recorder: JOHN MAGNOTTI

Time: _____ Evaluators: _____

Field Indicators:

I.) Streamflow and Hydrology	Absent	Weak	Moderate	Strong
1.) Presence or absence of flowing water and > 48 hrs since last rainfall	0	1	2	(3)
2.) Presence of high groundwater table or seeps and springs	0	(1)	2	3
3.) Leaflitter in streambed	(1.5)	1	0.5	0
4.) Drift lines	0	0.5	1	(1.5)
5.) Sediment on debris or plants	0	0.5	1	(1.5)

Total Streamflow and Hydrology Points: 8.5

II.) Geomorphology	Absent	Weak	Moderate	Strong
1.) Riffle-pool sequence	0	1	2	(3)
2.) Substrate Sorting (USDA texture in streambed)	0	1	2	(3)
3.) Natural Levees	0	(1)	2	3
4.) Sinuosity	0	1	(2)	3
5.) Active or Relic Floodplain	0	1	(2)	3
6.) Braided Channel	(0)	1	2	3
7.) Recent Alluvial Deposits	0	1	2	(3)
8.) Bankfull Bench present	0	1	2	(3)
9.) Continuous Bed and Bank	0	1	2	(3)
10.) 2nd order or greater **channel** present	(*Yes* = 3)		*No* = 0	

Total Geomorphology Points: 23

III.) Streambed Soils				
1.) Redoximorphic features present in sides of channel or head cut.	*Present* = 0		*Absent* = (1.5)	
2.) Chroma	(gleyed = 3)	1 = 2	2 = 1	> 2 = 0

Total Streambed Soils Points: 4.5

IV.) Vegetation	Absent	Weak	Moderate	Strong
1.) Rooted AQUATIC Plants in Streambed	0	1	(2)	3
2.) Presence of Periphyton/green algae	0	(1)	2	3
3.) Iron Oxidizing Bacteria/Fungus	0	0.5	(1)	1.5

4.) Wetland Plants in Streambed (Skip if no plants present in streambed)

SAV = 3 | Mostly OBL = 1.5 | (Mostly FACW = 1) | Mostly FAC = 0.5 | Mostly FACU, UPL, or None = 0

Total Vegetation Points: 5

Comments:

Front Page Total 47 points

V.) Benthic Macroinvertebrates	Absent	Weak	Moderate	Strong
1.) Benthic Macroinvertebrates	0	0.5	(1)	1.5
2.) Bivalves	(0)	1	2	3
3.) EPT taxa	(Present = 3)			Absent = 0

Total Benthic Macroinvertebrates Points: 4

VI.) Vertebrates	Absent	Weak	Moderate	Strong
1.) Fish	0	0.5	1	(1.5)
2.) Amphibians	0	0.5	(1)	1.5

Total Vertebrates Points: 2.5

Total Score: 47.5

Benthics/Amphibians Found:

Weather KVAHAMIL2
Rain Gauge KVAHAMIL2 Date of Last Rainfall 9/22/2015 Rainfall Amount 0.08"

Reach Description
Upstream: TRB HCT GRC RCU POF SDO ARB RPA Other: _____
Downstream: TRB HCT GRC RCU POF SDO ARB RPA Other: _____
Comments:

Storm Network Connections and Watershed Observations

Riparian Buffers Width

LB: Distance >25 feet 26-50 51-75 76-100 100+
Cover type: Tree Shrub Herbaceous Lawn Other:
Dominant Species:

RB: Distance >25 feet 26-50 51-75 76-100 100+
Cover type: Tree Shrub Herbaceous Lawn Other:
Dominant Species:

Riparian Buffer Comments

Other Observations and Comments:

Is the reach perennial? (YES) NO

Photo #	Direction (US, DS, LB, RB)	Notes

Site ID: LM REACH 2 Total Score: 37.5

Date: 10/12/2015 Recorder: JOHN MAGNETTI

Time: _____ Evaluators: _____

Field Indicators:

I.) Streamflow and Hydrology	Absent	Weak	Moderate	Strong
1.) Presence or absence of flowing water and > 48 hrs since last rainfall	0	1	2	(3)
2.) Presence of high groundwater table or seeps and springs	0	(1)	2	3
3.) Leaflitter in streambed	1.5	(1)	0.5	0
4.) Drift lines	0	0.5	1	(1.5)
5.) Sediment on debris or plants	0	0.5	1	(1.5)

Total Streamflow and Hydrology Points: 8

II.) Geomorphology	Absent	Weak	Moderate	Strong
1.) Riffle-pool sequence	0	1	2	(3)
2.) Substrate Sorting (USDA texture in streambed)	0	1	(2)	3
3.) Natural Levees	(0)	1	2	3
4.) Sinuosity	0	(1)	2	3
5.) Active or Relic Floodplain	0	1	(2)	3
6.) Braided Channel	(0)	1	2	3
7.) Recent Alluvial Deposits	0	1	2	(3)
8.) Bankfull Bench present	0	1	(2)	3
9.) Continuous Bed and Bank	0	1	2	(3)
10.) 2nd order or greater **channel** present	*Yes* = 3		*No* = (0)	

Total Geomorphology Points: 16

III.) Streambed Soils				
1.) Redoximorphic features present in sides of channel or head cut.	*Present* = 0		*Absent* = (1.5)	
2.) Chroma	gleyed = (3)	1 = 2	2 = 1	> 2 = 0

Total Streambed Soils Points: 4.5

IV.) Vegetation	Absent	Weak	Moderate	Strong
1.) Rooted AQUATIC Plants in Streambed	0	(1)	2	3
2.) Presence of Periphyton/green algae	0	(1)	2	3
3.) Iron Oxidizing Bacteria/Fungus	0	0.5	(1)	1.5

4.) Wetland Plants in Streambed (Skip if no plants present in streambed)

SAV = 3 Mostly OBL = 1.5 Mostly FACW = 1 Mostly FAC = (0.5) Mostly FACU, UPL, or None = 0

Total Vegetation Points: 3.5

Comments:

Front Page Total 32 points

V.) Benthic Macroinvertebrates	Absent	Weak	Moderate	Strong
1.) Benthic Macroinvertebrates	0	0.5	1	1.5
2.) Bivalves	0	1	2	3
3.) EPT taxa	*Present* = 3			*Absent* = 0

Total Benthic Macroinvertebrates Points: 3.5

VI.) Vertebrates	Absent	Weak	Moderate	Strong
1.) Fish	0	0.5	1	1.5
2.) Amphibians	0	0.5	1	1.5

Total Vertebrates Points: 2

Total Score: 37.5

Benthics/Amphibians Found:

Weather
Rain Gauge EVAHAMIL Date of Last Rainfall 10/4/2015 Rainfall Amount 0.02"

Reach Description
Upstream: TRB HCT GRC RCU POF SDO ARB RPA Other:
Downstream: TRB HCT GRC RCU POF SDO ARB RPA Other:
Comments:

Storm Network Connections and Watershed Observations

Riparian Buffers Width

LB: Distance >25 feet 26-50 51-75 76-100 100+
Cover type: Tree Shrub Herbaceous Lawn Other:
Dominant Species:

RB: Distance >25 feet 26-50 51-75 76-100 100+
Cover type: Tree Shrub Herbaceous Lawn Other:
Dominant Species:

Riparian Buffer Comments

Other Observations and Comments:

Is the reach perennial? YES NO

Photo #	Direction (US, DS, LB, RB)	Notes